

Remarks/Arguments

Claims 1-17 remain in the application. Claims 1-17 are rejected. Claims 15-17 are currently amended.

Claim Rejections Under 35 USC § 103

Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Green (United States Patent 5,733,643) in view of Lai and Fedtech.

Applicant respectfully traverses the rejection of claim 1 as being unpatentable over Green in view of Lai and Fedtech. In particular, Applicant submits that there is no motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art at the time of the invention, to combine the teachings of Green with that of Lai and Fedtech. Green teaches a process of manufacturing a barrier material. At column 5, lines 52-60, Green teaches that the barrier material is made "by first laying the fabric 14 on a flat surface, mold or form, and thereafter applying the polyester based polymer in uncured, liquid form, over the fabric." According to a second embodiment, a plurality of aluminum oxide or other ceramic tiles is provided along a surface that during use is presented in impact receiving relation to an assault or trauma by a projectile or other object. Applicant submits that the recited use of molds or forms in the manufacturing process would suggest strongly to one of ordinary skill in the art that the barrier materials are fabricated directly into different shapes and configurations depending upon the intended use of the final product. Green does not teach or even suggest that "various sized" armor plates are cut from the barrier material once it has been formed. In fact, Green does not mention at any point in the reference the concept of cutting or otherwise shaping or processing the barrier material once it is formed.

Lai teaches forming a substrate into various shaped armor pieces using an abrasive waterjet. However, Lai teaches cutting only from large single sheets of substrate, see for instance the middle picture shown at page 2/4 of the NPL document submitted with the IDS filed 3-26-04. Lai does not teach or suggest cutting various sized armor plates from a fixed layer formed by affixing a plurality of armor tiles side by side.

Fedtech merely teaches processing of ceramic tile using an abrasive waterjet.

The difference between the instant invention as claimed at claim 1 and the prior art of record relates to "using an abrasivejet cutter, cutting continuously through at least two adjacent ceramic tiles of the affixed layer of ceramic tiles..." Although Green teaches forming a layer consisting of a plurality of ceramic tiles, and Lai (or Fedtech) separately teaches using an abrasive waterjet to cut armor plates or ceramic tile, there is no motivation for combining the teaching of Green with that of Lai and/or Fedtech. In other words, at the time the invention was made there would have been no motivation to form a layer consisting of a plurality of ceramic armor tiles and then subsequently use an abrasive waterjet to cut "continuously through at least two adjacent ceramic tiles of the affixed layer of ceramic tiles."

In support of this argument, Applicant points to column 6, lines 31-35, where Green states (emphasis added) "the process by which these tiles are attached is critical to the function of this embodiment of the invention..." Clearly, Green teaches the critical nature of the process of attaching the ceramic tiles of the barrier material. Applicant respectfully submits that one of ordinary skill in the art at the time of the invention would have considered any post-adhesion cutting or processing of the ceramic tiles to be a part of the "process of attaching," since any such activity would naturally affect the ability of the ceramic tile, and therefore of the barrier material in general, to absorb the impact energy of a projectile or other object. Accordingly, one of ordinary skill in the art at the time the invention was made would not have been motivated to modify the teachings of Green as is suggested at page 2 of the Office Action dated 06/07/2005, since Green clearly states that the process of attaching the tiles is critical to the function of the barrier material.

Applicant respectfully submits that the Examiner has failed to provide sufficient evidence to support the proposed motivation at page 3 of the Office Action dated 06/07/2005. Certainly, Lai teaches the advantages of using an abrasive waterjet for forming a substrate into various shaped armor pieces. However, as noted *supra*, Lai teaches only substrates consisting of a large single sheet and not a substrate formed by affixing a plurality of ceramic armor tiles side by side. Since Green teaches the use of

molds and forms during the manufacturing process, Applicant doubts that one skilled in the art at the time the invention was made would have found sufficient motivation to combine the teachings as has been suggested. In fact, the use of molds and forms supports fabrication of various shaped armor pieces having curves, corners and holes *without* requiring additional cutting or drilling operations post fabrication. Furthermore, Applicant respectfully submits that one of ordinary skill in the art would have been directed away from making the proposed combination in view of Green's statement that "the process by which these tiles are attached is critical to the function of this embodiment of the invention..." Applicant notes that a prior art method of producing multi-hit armor is described at paragraph [006] of the application as originally filed. It is stated that the base element is first cut to the desired shape (or as in the case of Green, fabricated in the desired shape using molds or forms), and then a plurality of individually cut tiles are assembled onto the base element. Applicant believes that the process for attaching the ceramic tiles in the barrier material of Green is performed in just this way. In other words, Green adheres pre-cut ceramic tiles to the base resin layers of the barrier material.

The invention as claimed at claim 1 supports the fabrication of armor plates of a wide range different sizes and shapes, without requiring the fabrication of different sized ceramic tiles. In other words, if for example ceramic tiles measuring three inches by three inches are to be used, then an appropriate number of individual tiles is simply assembled into a fixed layer having an appropriate two-dimensional size. The same tiles are readily used to produce armor plates having different sizes or shapes, simply by adjusting the number of tiles used and/or the shape of the fixed layer that is produced. The tiles are not cut prior to assembly into the fixed layer, which saves time and ultimately reduces the size of spaces between the tiles. With suitable planning and design, armor plates are cut as nested shapes from the fixed layer of ceramic tiles. This process is very versatile since armor plates of different size and shape are readily produced. Furthermore, unlike the teaching of Lai and Fedtech, the armor plates are cut from substrates comprising a plurality of different tiles rather than from a single sheet substrate. Advantageously, an impact at one of the plurality of tiles does not disrupt the remaining tiles, and therefore an armor

plate that is fabricated according to the instant invention may sustain a greater number of impacts compared to an armor plate that is fabricated from a single sheet substrate.

Accordingly, Applicant respectfully submits that claim 1 is in proper condition for allowance. Favorable consideration is kindly requested.

Claim 2 depends from believed allowable claim 1 and is also believed to be in proper condition for allowance. Favorable consideration is kindly requested.

Having regard to claim 3, Applicant fails to understand where in the reference "Green indicates processing the entire substrate such that cutting in Green modified will be through element 38 also." In fact, Green teaches building up a barrier material by the successive application and adhesion of layers of resin and in some embodiments ceramic tiles. Green teaches using forms or molds during the fabrication process. Green does not teach processing the entire substrate in any way subsequent to forming the barrier material including the ceramic tile. Accordingly, Applicant respectfully submits that claim 3, which depends indirectly from believed allowable claim 1, is also in proper condition for allowance. Favorable consideration is kindly requested.

Claim 4 depends from believed allowable claim 1 and is also believed to be in proper condition for allowance. Favorable consideration is kindly requested.

Having regard to claim 5, Applicant respectfully submits that Green does not teach forming a plurality of plates. Rather Green teaches forming a barrier material that in some embodiments includes a layer consisting of a plurality of ceramic tiles. Molds or forms are used to build up the layers of the barrier material, the layers comprising fabric coated with different resins, such that the final product apparently has a desired shape and size as determined by the mold or form that is used. Once the resin layers are formed, ceramic tiles are attached using a process that is described by Green as "critical to the function of this embodiment of the invention." Green does not teach cutting the barrier material once formed. Accordingly, Applicant respectfully submits that claim 5, which depends indirectly from believed allowable claim 1, is also in proper condition for allowance. Favorable consideration is kindly requested.

The same arguments that were made having regard to claim 5 also apply to claim 6 *mutatis mutandis*. Accordingly, Applicant respectfully submits that claim 6, which depends indirectly from believed allowable claim 1, is also in proper condition for allowance. Favorable consideration is kindly requested.

Claims 7 through 10 depend either directly or indirectly from believed allowable claim 1 and are also believed to be in proper condition for allowance. Favorable consideration is kindly requested.

Applicant respectfully traverses the rejection of claim 11 as being unpatentable over Green in view of Lai and Fedtech. The same grounds for rejecting claim 1 are used to reject claim 11, and accordingly Applicant respectfully submits that the arguments presented in favor of the patentability of claim 1 also apply to claim 11, *mutatis mutandis*. In addition, Green does not teach cutting through a corresponding portion of the backing element, as was discussed *supra* with reference to claim 3. Accordingly, the same argument that is presented *supra* with reference to claim 3 also applies to claim 11 *mutatis mutandis*. Applicant respectfully submits that claim 11 is in proper condition for allowance. Favorable consideration is kindly requested.

The same arguments that were presented with reference to claims 5 and 6 also apply to claims 12 and 13, respectively, *mutatis mutandis*. Accordingly, Applicant respectfully submits that claims 12 and 13, which depend from believed allowable claim 11, are also in proper condition for allowance. Favorable consideration is kindly requested.

Claim 14 depends from believed allowable claim 11 and is also believed to be in proper condition for allowance. Favorable consideration is kindly requested.

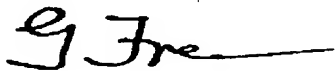
Claims 15-17 have been amended in order to correct a clerical error. The claims as originally filed depend from claims 1 or 3, but in fact should have depended from claim 11. Amended claims 15-17 depend from believed allowable claim 11 and are also believed to be in proper condition for allowance. Favorable consideration is kindly requested.

No new matter has been added in the amended claims.

Applicant looks forward to receiving favourable reconsideration of the present application.

Please charge any additional fees required or credit any overpayment to Deposit Account No: 50-1142.

Respectfully submitted,



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